

SUSTAINABILITY IN PORTUGAL

SUSTAINABLE REGIONAL STRATEGY AND THE WIDESPREAD OF
A NEW BUSINESS MODEL.

C3P/NASA - INTERNATIONAL WORKSHOP ON POLLUTION
PREVENTION AND SUSTAINABLE DEVELOPMENT

"ENHANCING MISSION THROUGH PROACTIVE ENVIRONMENTAL RISK
MITIGATION".

Presented by Eduardo Pereira - Team Member for the Torres Vedras` Master Plan
– Strategy Development of a New Regional Value Chain.

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Main issues:

- ▣ Sustainable Development Strategy for Portugal – Policies and Results;
- ▣ European Directives for Renewable Energies and CO2 emissions` reduction;
- ▣ Regional Action – The New Torres Vedras` Value Chain;
- ▣ Partnership for Research and Business;
- ▣ Widespreading a Glocalizational Concept.

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**Some references of the National Strategy
for the Sustainable Development**

—

**Climate Change and Energy
(2008-2012)**

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- ▣ Main Action Vectors of the National Strategy for Sustainable Development:
 - **National Programme for Climate Change (PNAC);**
 - Policies and Actions for CO2 emissions` reduction in different economic sectors;
 - **National Plan for Emissions Allowances (PNALE II 2008-2012);**
 - Sectors affected by Kyoto Protocol - 44% of the total emissions of Portugal;
 - Emissions related with EU-ETS (Emissions Trading System) (Annex I – Kyoto Protocol);
 - 210 installations involved in;
 - Just 10% of the referred total emissions` allowances can be purchased by carbon trading (CERS – CDM projects or ERU – JI projects).
 - **Portuguese Carbon Fund (FCP).**
 - Mechanism to reach emissions` reduction through carbon trading or financing CDM and JI projects.

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Portugese Goals (2007 - 2012)	Mt CO2e/year
Expected Target Deficit (2007-2012)	-8,22
PNAC measures - reductions	3,69
PNALE - EU-ETS sectors	0,09
Renewable Energies and Biofuel	1,56
FCP - Carbon credits Purchases	-2,88
Expected Additional Emissions Generated by the GDP Growth- Carbon credits purchased by the FCP	-2
Total FCP - Carbon credits purchases	-4,88

- The EU commitment with the Kyoto Protocol established a limit target for Portugal (2008-2012) of a CO2 emissions` increase based in 27% of the total emissions in reference to 1990 (EU Cap);
- The expected deficit for the period will be 8,22 MtCO2eq/year;
- The deficit will be eliminated by different actions, one of them, through renewable energies and biofuels investments – approx. 1,56 Mt CO2e/year;
- The remaining deficit (2,88), it will be eliminated Portuguese Carbon Fund, as well as, the additional emissions generated by expected GDP Grothw (2,0) in the period.

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- 70% of the PNAC measures are related with Energy Efficiency and Renewable Energies;
- Portugal has one of the most ambitious targets for Renewable Energy Sources production, which is equivalent to 45% of the electricity consumption in 2010;
- Relevant renewable measures:
 - a contest of 1800 Mwp wind energy was launched in 2007, linked to a regional cluster development;
 - 7.000 Mwp of Hydro Energy – 2020 Target;

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Renewable Energies - Installed Capacity - Evolution and Goals for 2010

	1997	2008	2010
Hydro	4 375	4 873	5 575
Wind	29	2 081	5 100*
Biomass (without coogeneration)		24	250
Biogas	1	11	100
Urban Wastes		24	250
Photovoltaic	0,53	56,5	150
Wave/ Tidal			250
Geothermal	8,8	30	

* Goal for 2012

- 150 Mwp of Solar Photovoltaic – including the biggest solar photovoltaic plant of the world (Moura PV Plant 42Mwp – installed in 2008).
 - PV micro-generation systems (under 4 Kwp)- New framework with a c€65/Kwh feed-tariff for an initial five-year period - 10Mwp Target per year;
- Solar Water Heating (Tap) Plan – Obligatory its installation on Buidings;;
- Establishment of new Pilot zone for wave and tidal energy investments.

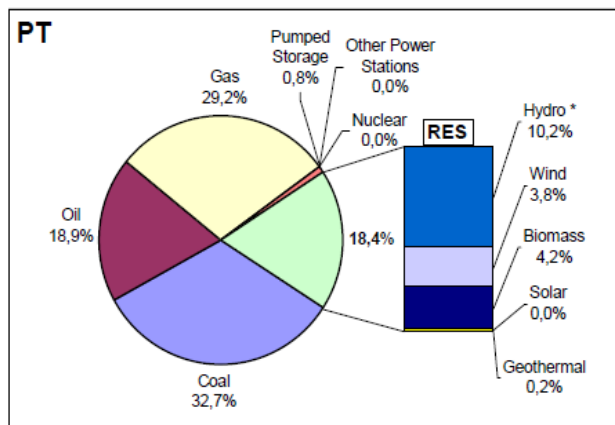
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Figures from 2005

The well-performing renewable energies development reached in 2005.

Too weak about fuels used in Transports.

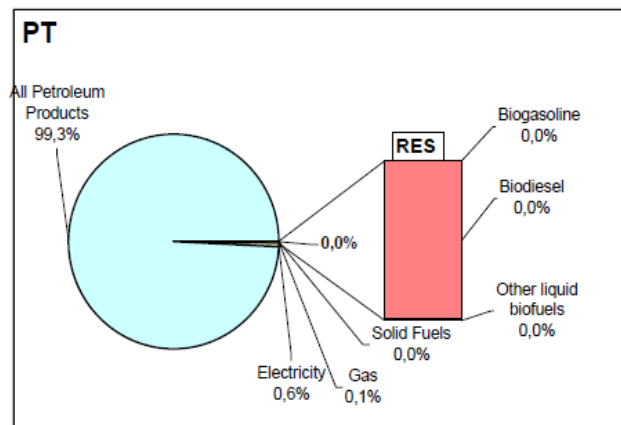
Gross Electricity Generation by fuel (2005)



Source: Eurostat

* Not including generation from hydro pumped storage, but including electricity generation to pump water to storage. Municipal Solid Waste, Wood waste, Biogas included.

Final Energy Consumption by Fuel, Transport (2005)



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▣ Other Measures:

- Increasing Energy Efficiency actions by demand and supply side, which is foreseeable to reduce 10% of energy consumption until 2015 and to decreased environmental impacts and energy intensity. The energy efficiency` measures will be:
 - National Action Plan for Energy Efficiency, with the target to reach about 9% of energy consumption` decrease until 2015;
 - EU Directive for buildings (EPBD – Energy Performance Buildings Directive), which demands 40% of efficiency through Energy Scheme Certification;
 - New Industrial Regulation for Energy Managament;
 - /Energy consumption` decrease in Public (State) Services - Green purchase plan.

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**Proposals - European Directives for
Renewable Energies and CO2
Emissions` reduction
(2013-2020)**

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- That strategy include the 27 Members States:
 - EU commitment to achieve a reduction of at least 20% in the emission of greenhouse gases (GHG) by 2020 compared to 1990 levels and the objective of a 30% reduction by 2020, subject to the conclusion of a comprehensive international climate change agreement;
 - EU target of 20% renewable energy by 2020 including a 10% biofuel target.

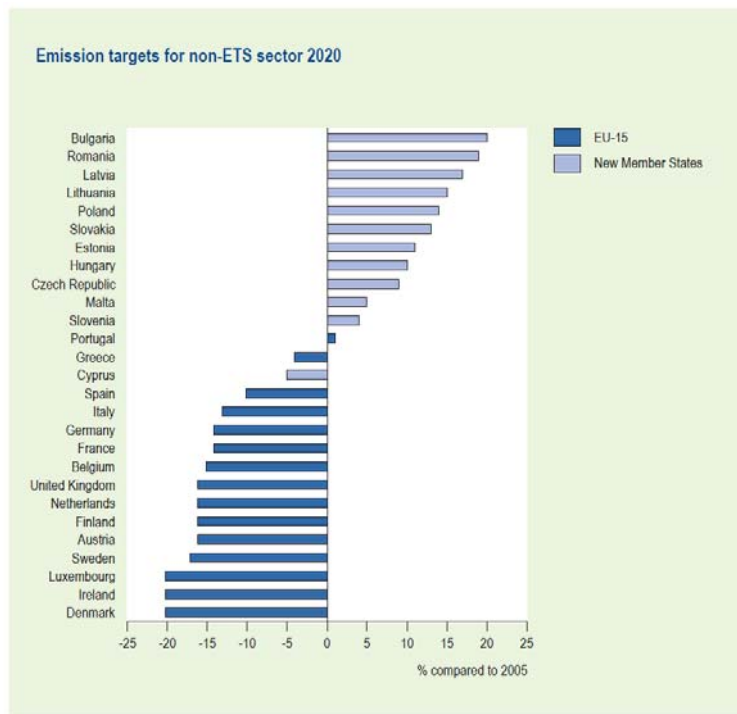
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- Directive amending EU-ETS (EU greenhouse gas emission allowance trading system)
 - The proposal aims to reduce GHG emissions from the ETS sectors in 2020 by 21% relative to 2005, corresponding to a reduction of 14% relative to 1990;
 - More sectors are covered by the ETS system than in the first (2005-2007) and second (2008-2012) period. New sectors are specific non-combustion sources, carbon capture and storage of GHG emissions, and CO₂ from aviation;
 - New Allocation rules: auctioning versus free allocation. Full auctioning in 2013 to sectors that can pass on the increased costs, such as the energy sector. Sectors more exposed to international competition will receive free allocation in 2013;
 - More flexibility with CDM and JI projects.

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- Sectors not covered by EU-ETS - Reduce EU-wide GHG emissions by 10% below 2005 levels by 2020 - small industrial installations, buildings, transport, agriculture and waste:
 - Each Member State has a specific target based on Gross Domestic Production (GDP) per capita;
 - Actions by Member States can decide which instruments and options to use in order to achieve reductions such as traffic management, clean transport, taxation, promotion of public transport, urban planning, and promotion of insulation.

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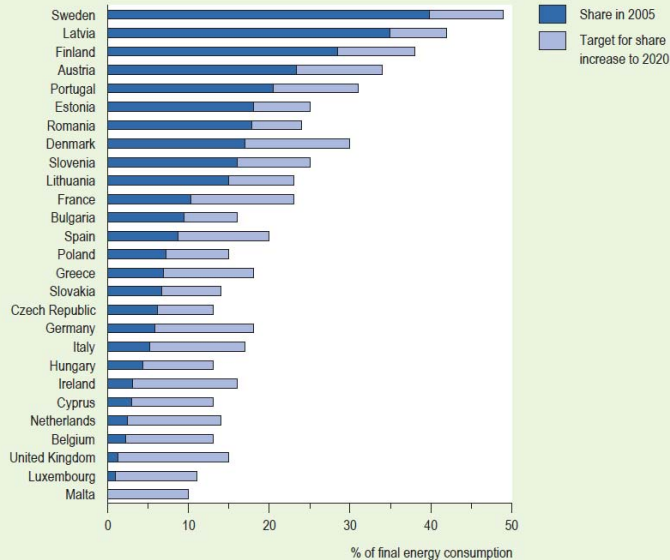
- This means that efforts by Member States vary from a reduction of -20% to an increase of +20%;
- Poorer Member States (low GDP) are permitted to grow emissions;
- The reasoning is that countries with a low GDP will have relatively higher direct costs in the ETS sectors. This is compensated by less reduction or even an increase in emissions in non-ETS sectors.

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- Renewable Energy Directive - Aims to establish a common framework - Overall binding target at EU level of a 20% share of renewable energy sources in total energy consumption by 2020
 - The proposal distinguishes three sectors for use of renewable energy: (1) electricity, (2) heating and cooling and (3) transport.
 - The directive defines rules for intra-EU trading with standardised 'Guarantees of Origin' (GOs) and sets environmental sustainability criteria for biofuels.
 - A 10% binding minimum target for biofuels in transport is to be achieved by each Member State, as well as binding national targets per Member State by 2020 in line with the overall EU target of 20%. The share of renewables in the transport sector only refers to petrol and diesel fuel. Other modes of transport such as shipping, rail and aviation are also included.

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Share of renewable energy in 2005 and targets for 2020



- The creation of a tradable GOs regime allows Member States to achieve their targets in the most cost-effective way possible in their specific circumstances;
- In addition to developing local renewable energies, EU States will be able to buy GOs from other EU Member where renewable energy is cheaper to produce;
- Imported electricity produced from renewable energy sources outside the EU may count towards Member State targets (just produced since 2013);
- Member States can exclude GOs of already subsidized renewable energy (feed-tariff).

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- **Considering the challenges facing these new directives` effects, Portugal is well positioned to reach its targets:**
 - **Electricity** - Portugal is one of the world leaders regarding the renewable energies production (5th at the World ranking), allowing it to reach the EU targests for Renewable Energies with a relevant economical impact;
 - The tradable GOs mechanisms will allow Portugal to pursue an cost effective strategy focused on new solar plants that can reach the grid parity;
 - **Industry** – comparatively to electricity sector, a large challenge will be done to accomplish the EU targets, which additional efforts will represent 2,4 to 3,5 Bi € between 2013 e 2020.

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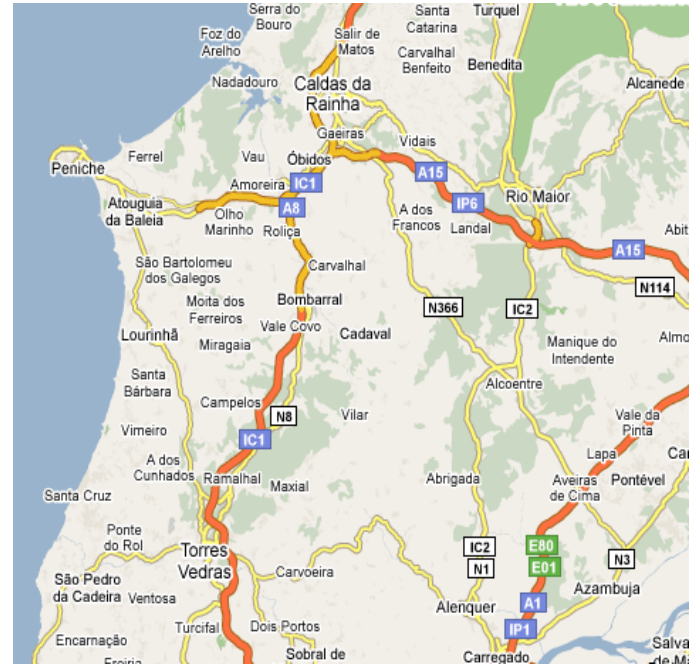


Regional Action – The New Torres Vedras` Value Chain

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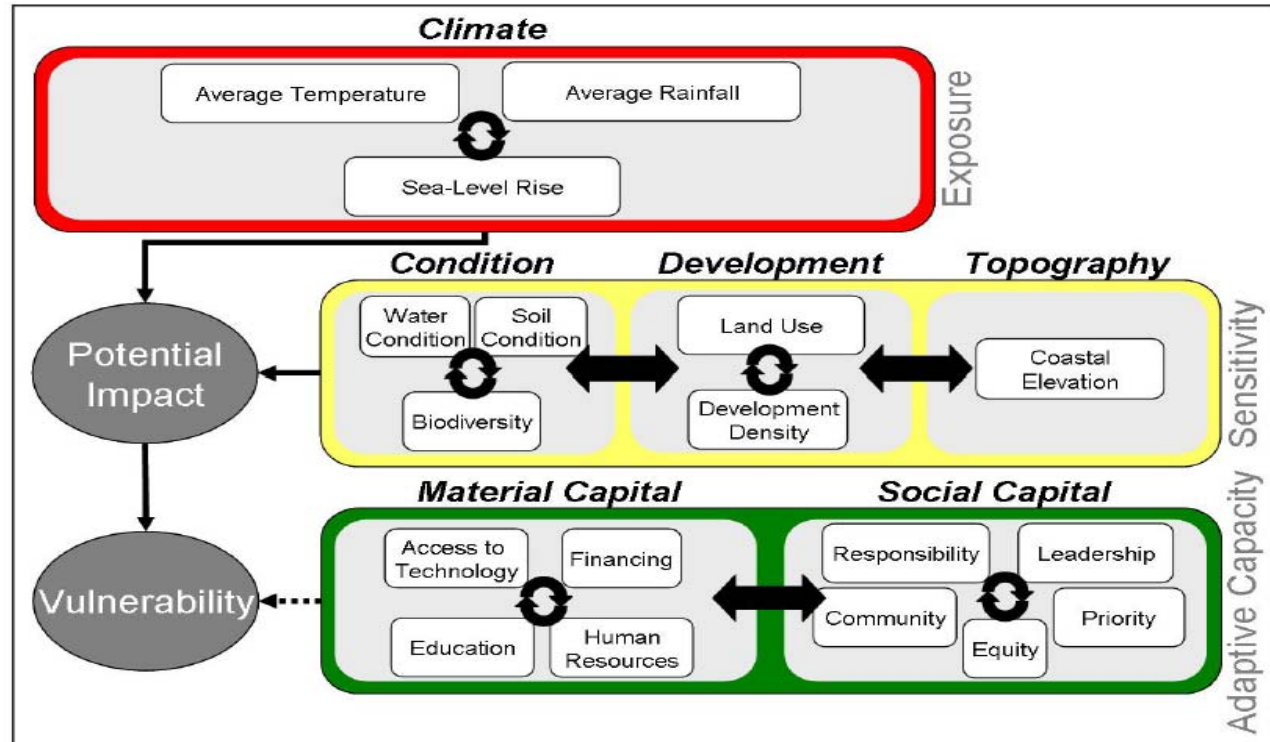
- The Torres Vedras` population is constituted by 78.000 inhabitants.
- The Region`s dimension (Administratively speaking) is around 40 square Km.
- Its Coast is about 20 Km, a strong potential for Tourism;
- Just at 33 Km from Lisbon with direct connections by Highway and railroad.

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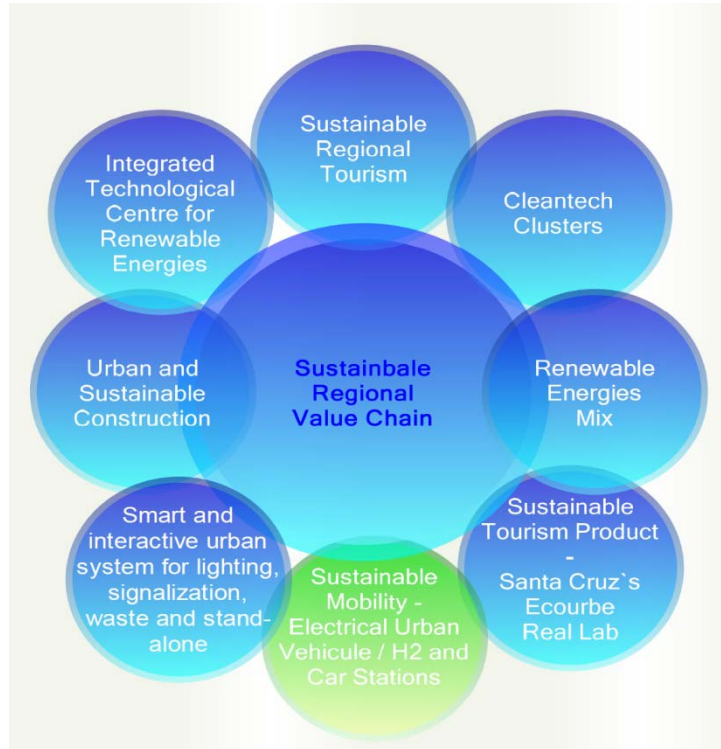
- **The Torres Vedras`s Municipality is developing a Sustainable Regional Development Strategy. The main actions are:**
 - A Technological Platform, for Renewable Energies Research and Cleantech clusters;
 - A strategic Sustainable Tourism action for the whole region;
 - A Strategic actions for Urban and Sustainable Construction;
 - A new concept of Tourism business, The Santa Cruz District – Ecourb;
 - A Plan for Renewable Energies Mix Implementation;
 - Mobility Strategy through new Electrical Vehicle for Urban Transportation and Hydrogen Fueling Stations around the region.

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The Sustainable Regional Development proposed follows a Decision-making Model considering climate constraints, potential impacts and vulnerabilities.



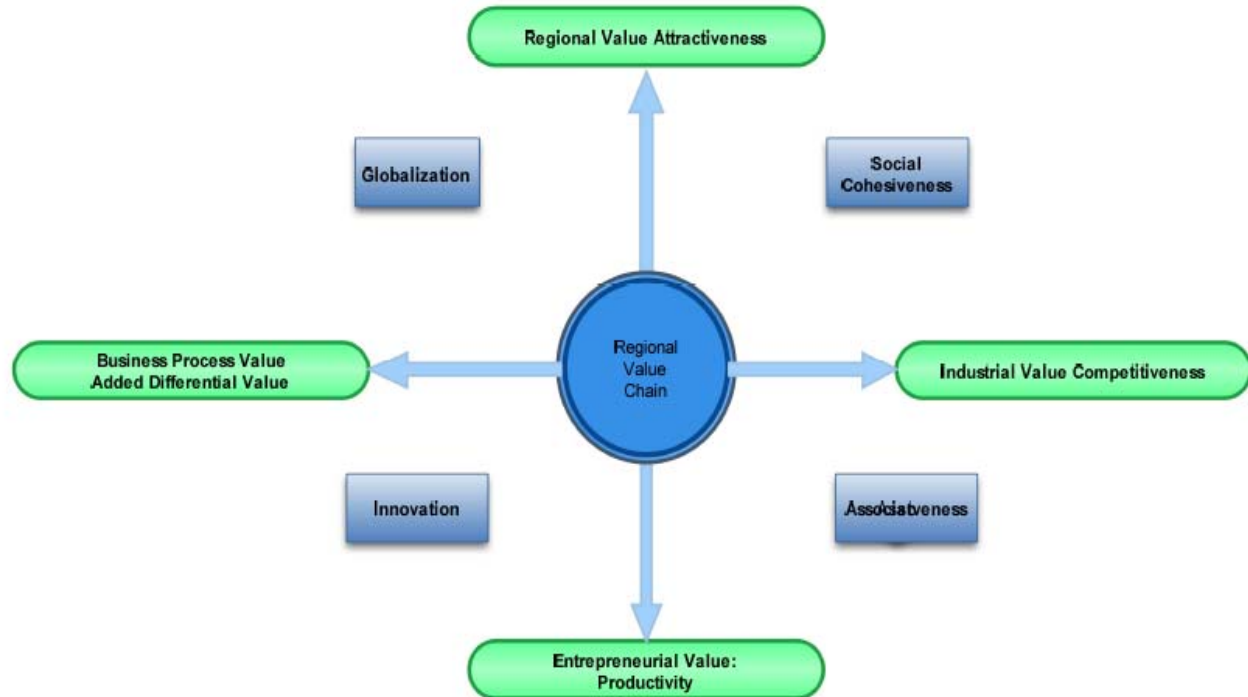
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- This Supply Chain is also committed with an Inter-Municipality project named “Rede Ecos-Renewable Energies and Sustainable Construction” partnered with other 6 Portuguese Municipalities;
- The different competences and options are entirely based on Green Business opportunities;
- All the referred actions are in a Conceptualization Process Stage and Pre-network integration;
- Formal engagements through MoUs and legal contracts were already obtained and the job is in course, but far from done.

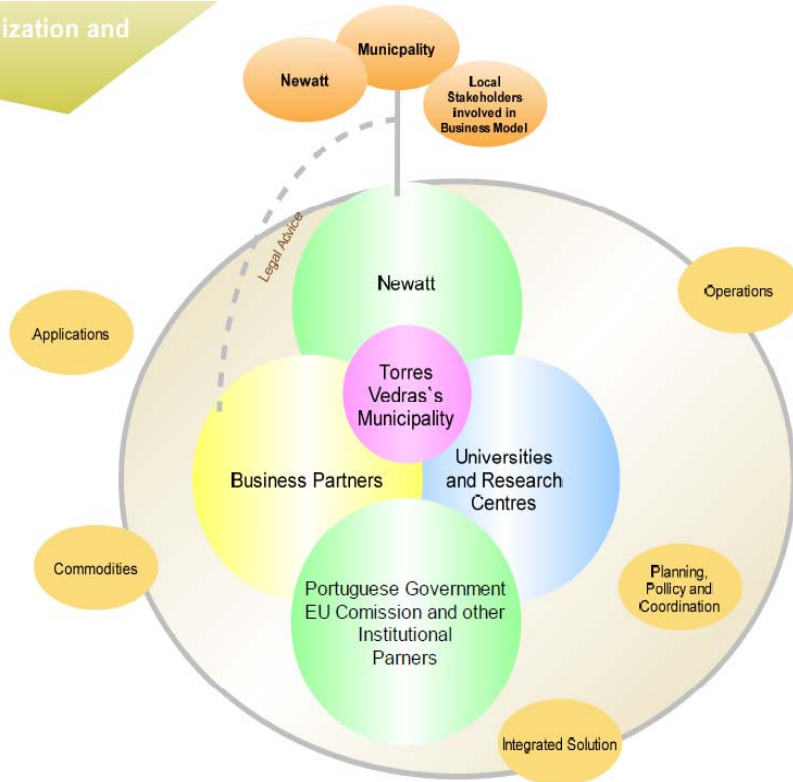
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The Sustainable Regional Value Chain assures relevant output benefits, as Regional Value Attractiveness, Industrial Competitiveness, Productivity and Added Value.



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Our Organization and Structure

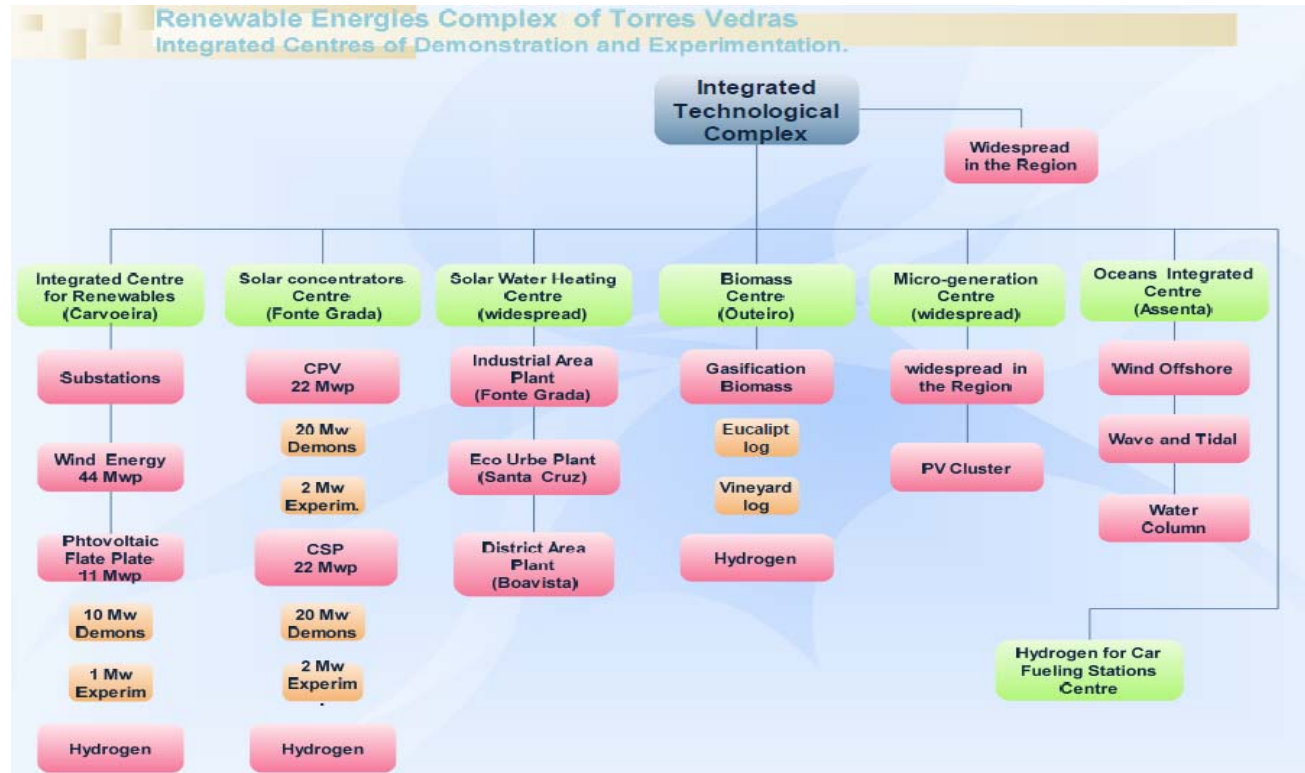


The project will be lead by a Consortium constituted by the Municipality, the Newatt (the Municipality`s main partner in the Regional Development) and Local Capital Partners;

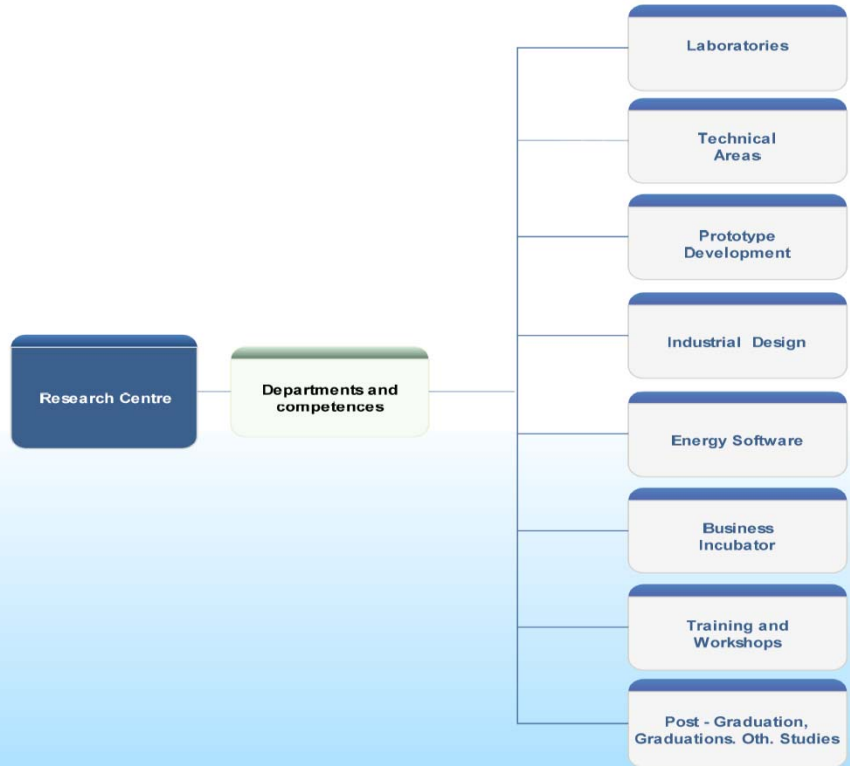
Planning and the Project Management will be executed by the Consortium strictly connected with Main Business Partners, Universities and Research Centres and Portuguese and other International Institutional Partners.

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The Technological Complex assumes as one of the main drivers of the New Regional Value Chain



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- The different R&D competences can be divided in three main groups
 - Research work – Lab, Technical Areas and Prototype Development;
 - Products and Business – Industrial Design, Energy Software and Incubators;
 - Specialized Studies – Post-Graduation, Graduation and Training/Workshops.

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Partnership for Research an Business

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Torres Vedras / C3P-NASA

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- Portugal is an European Country deeply engaged with the EU Project. At the same time its evolution in History is remarkable inconstant about strategic positioning in relation with your Neighbor and the other Continental Countries;
- The Country` s geographic location and its dimension impose Portugal a restrict and dependent position at one least terrestrial boundary with Spain, placing an inevitable periphery in the European Union (27 MS)
- The Atlantic influence is the backbone of our idiosyncrasy, which is proved by certain historical periods and presently is the main strategic resource to effective our action and competitiveness around the World (integrated in the European Project).

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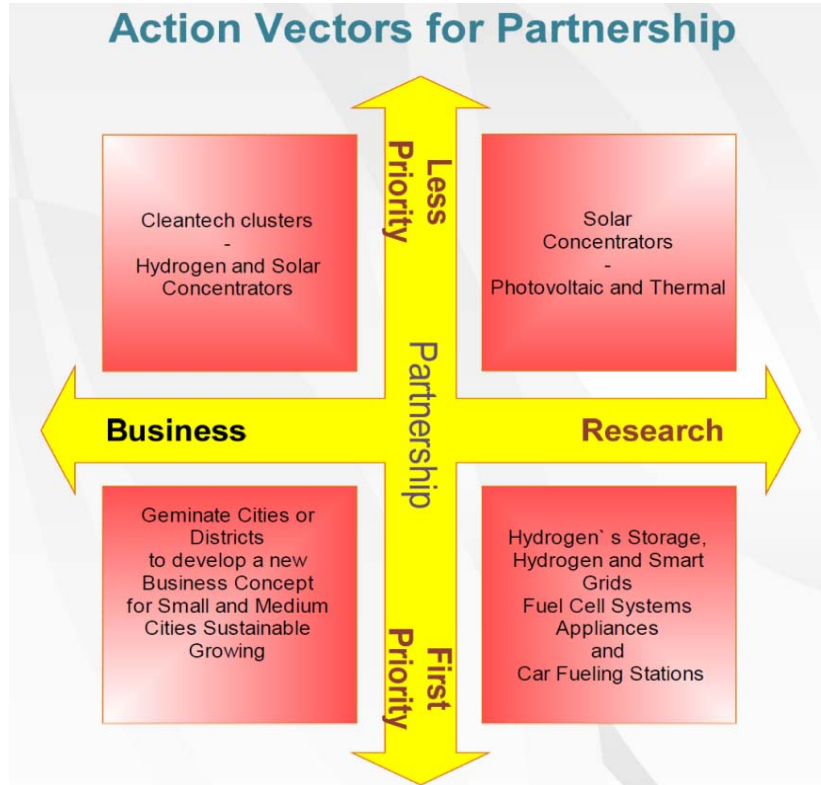
- ▣ The Partnership for Research (eventually Business) between Torres Vedras's Municipality, C3P/ NASA (and the California's University), will be leveraged by the main actions:

- Hydrogen;

- Storage to eliminate intermittence Electricity Generation by Renewable Energies;
- Hydrogen and smart Grids interconnections;
- Fuel Cells systems for different appliances;
- Car Fueling Stations.

- Cities Geminatio (Twin)— (It can provide a new Sustainable concept for small and medium cities based on Urban and Sustainable Construction, Tourism and Smart Cities Growth).

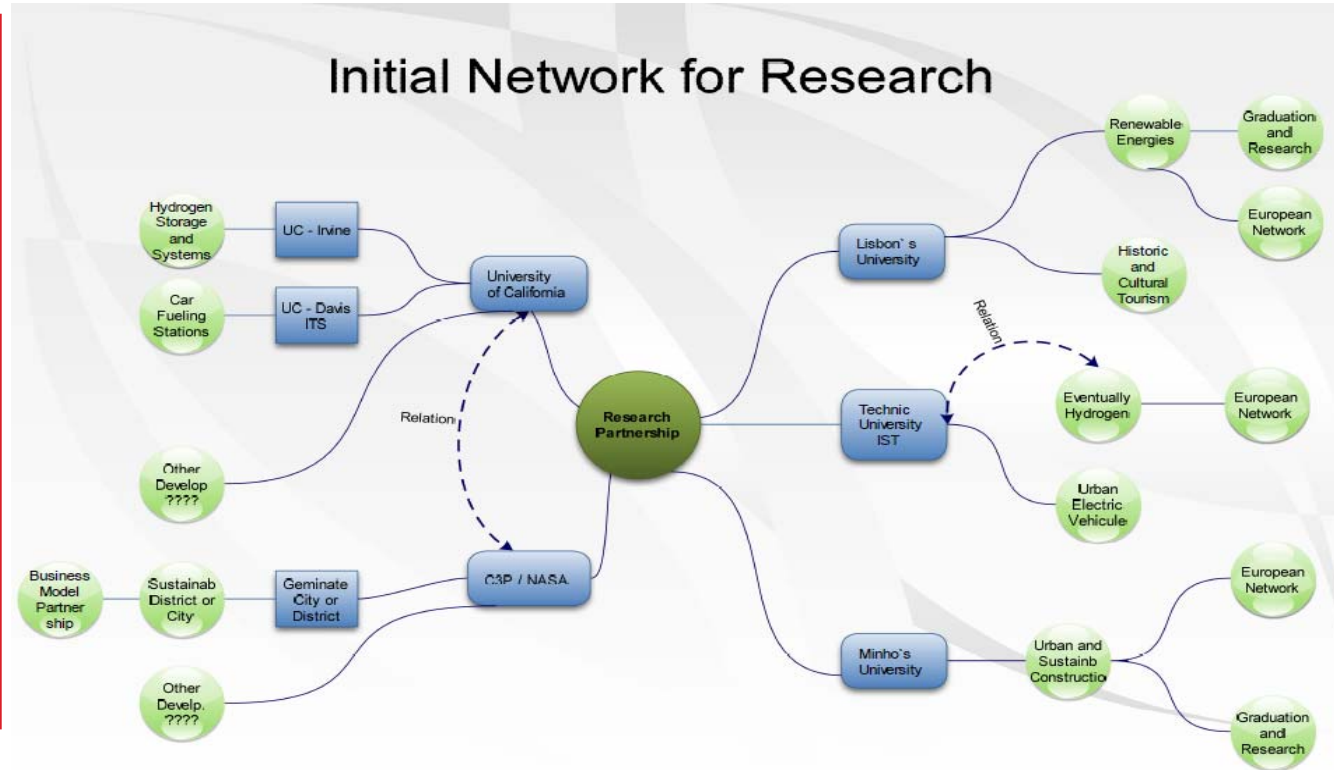
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- The partnership is mainly focused on research but also (eventually) in business opportunities;
- The first research priority is the Hydrogen linked with storage, smart grids interconnections, appliances and fueling stations. About business opportunities, I would be interesting through Cities Geminatıon to leverage a new concept for small and medium cities;
- The other potential priority for research is solar concentration and the cleantech cluster businesses (Hydrogen and Solar Concentrators).

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The image shows the first Institutions that will participate and carry the research activities, post graduation and graduation studies.

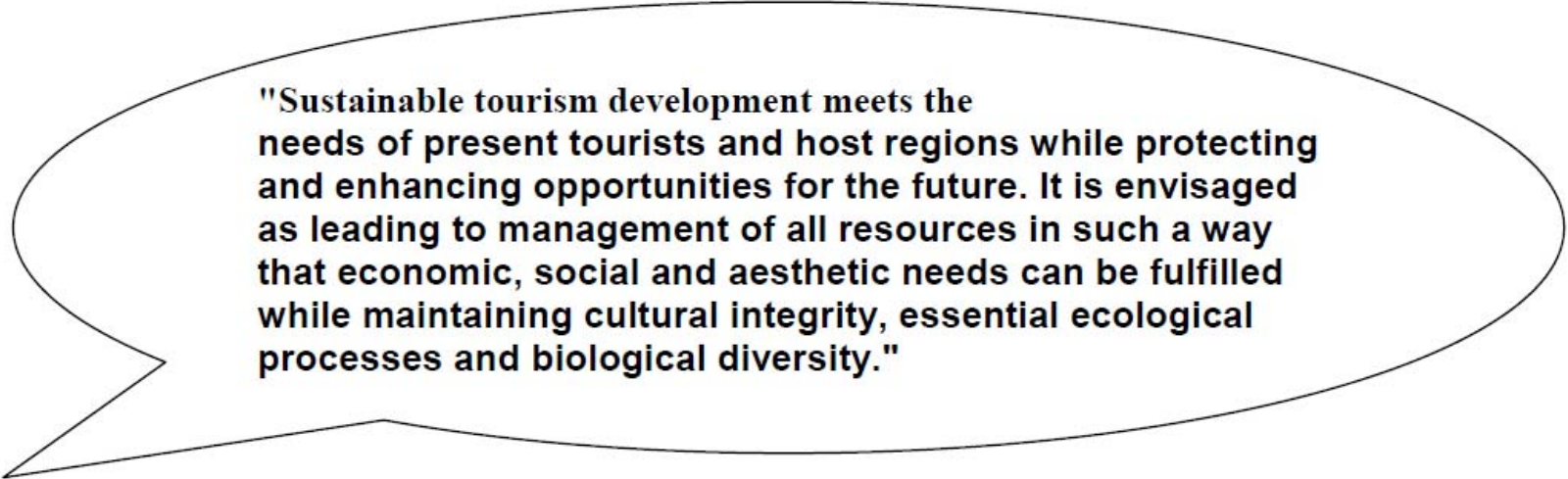


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Widespreading a New Business Concept
“ The Santa Cruz EcoUrb”

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"Sustainable tourism development meets the needs of present tourists and host regions while protecting and enhancing opportunities for the future. It is envisaged as leading to management of all resources in such a way that economic, social and aesthetic needs can be fulfilled while maintaining cultural integrity, essential ecological processes and biological diversity."

Agenda 21 for the Travel & Tourism Sector, World Travel & Tourism Council / World Tourism Organisation / Earth Council, 1996.

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- Santa Cruz is a district in Torres Vedras, which intends to be a Sustainable Business Model for small and medium cities around the world that seeks to face a market differentiation through Sustainable and Smart Growth.
- The project will be planned by Sustainable Urban and Logistics concepts to support a Green Tourist Product for different scales (District, Small and Medium Cities);
- Research, Cleantech and systems applied on the new Regional Value Chain, in Torres Vedras will be introduced in the Ecourb as a real Lab for a new Glocalizational (thinking Globally, but acting locally) Concept Business Model.

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- ▣ Main Framework to support the job:

- Geminate (Twin) Cities developments;

- Agenda 21 for Tourism,

- Sustainable District Logistics and Quality Management;

- Sustainable Certification - Ecolabeling or System Certification for Tourism Destination, Urban Design, Buildings and Business Network.

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SQM – assessment framework

SQM - A professional tool based on simple questions:

- Which direction do we choose for our future?
ORIENTATION – The principles of sustainable development
- Which are the societal forces and the capacities for co-operation?
SOCIAL POTENTIAL – The local key factors for sustainable development
- Which levers could be used for reorienting development?
ACTION DYNAMICS – The transformation levers

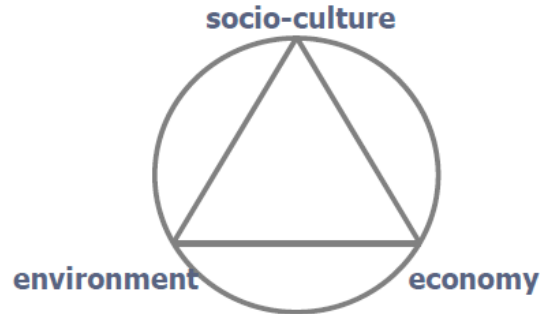
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ORIENTATION: 10 Components of Sustainability: WHAT?

What do we want to sustain?

Development dimensions

1. Environmental dimension
2. Economic dimension
3. Socio-cultural dimension



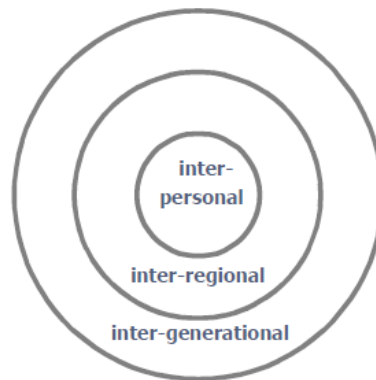
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ORIENTATION: 10 Components of Sustainability: WHY?

Which conflicts of interest are the motives?

Dimensions of equity

4. Social and gender equity (inter-personal)
5. Equity between regions (spatial)
6. Equity between generations (temporal)



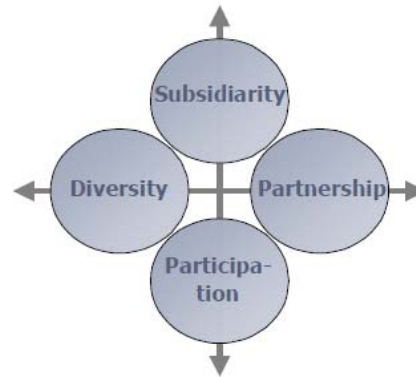
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ORIENTATION: 10 Components of Sustainability: HOW?

Which basic approaches can help us?

Systemic Principles

- 7. Diversity
- 8. Subsidiarity
- 9. Networking / Partnership
- 10. Participation



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The evaluation of the model's parameters results from the SWOT Analysis.

ORIENTATION		S	W	O	T
01	Environment	●●	●●	●●●	●●●
02	Economy	●●	●●	●●	●
03	Socio-culture	●●●	●●●	●●	●●●
04	Equity between individuals	●●	●●●	●●●	●●
05	Equity between territories	●●	●●●	●	●●
06	Equity between generations	●	●●●	●●	●●●
07	Diversity	●	●●●	●●●	●●●
08	Subsidiarity	●●●	●●●	●●	●●
09	Networks / Partnership	●●	●●●	●●●	●●●
010	Participation	●●	●●●	●●	●●●

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1. Economic sustainability - that is profitable in both the immediate and long term

- Form partnerships throughout the entire supply chain from micro-sized local businesses to multinational organisations
- Use internationally approved and reviewed guidelines for training and certification
- Promote among clients an ethical and environmentally conscious behaviour
- Diversify the products by developing a wide range of tourist activities
- Contribute some of the income generated to assist in training, ethical marketing and product development
- Provide financial incentives for businesses to adopt sustainability principles

2. Ecological sustainability - development that is compatible with the maintenance of essential ecological processes, biological diversity and biological resources

- Codes of practice should be established for tourism at all levels
- Guidelines for tourism operations, impact assessment and monitoring of cumulative impacts should be established
- Formulate national, regional and local tourism policies and development strategies that are consistent with overall objectives of sustainable development
- Institute baseline environmental impact assessment studies
- Ensure that the design, planning, development and operation of facilities incorporate sustainability principles
- Ensure tourism in protected areas, such as national parks, is incorporated into and subject to sound management plans
- Monitor and conduct research on the actual impacts of tourism
- Identify acceptable behaviour among tourists
- Promote responsible tourism behaviour

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3. Cultural sustainability - increase people's control over their lives and is compatible with the culture and values of those affected and strengthens the community identity

- Tourism should be initiated with the help of broad based community input
- Education and training programs to improve and manage heritage and natural resources should be established
- Conserve cultural diversity
- Respect land and property rights of traditional inhabitants
- Guarantee the protection of nature, local and the indigenous cultures and especially traditional knowledge
- Work actively with indigenous leaders and minority groups to insure that indigenous cultures and communities are depicted accurately and with respect.
- Strengthen, nurture and encourage the community's ability to maintain and use traditional skills.
- Educate tourists about desirable and acceptable behaviour
- Educate the tourism industry about desirable and acceptable behaviour

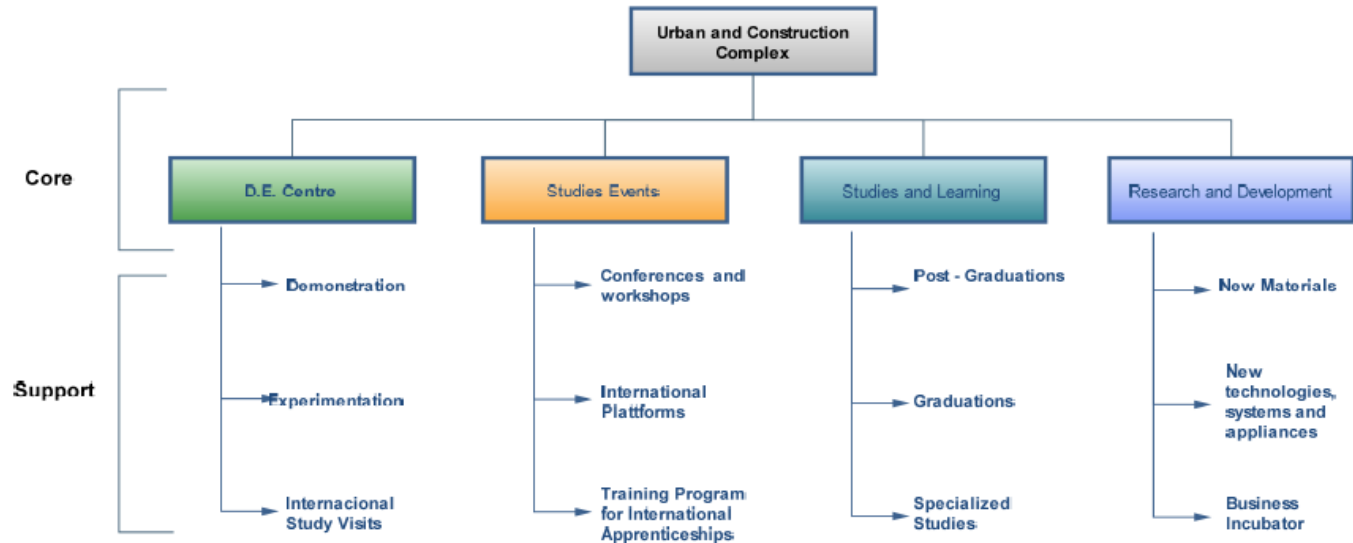
4. Local sustainability - that is designed to benefit local communities and generate/retain income in those communities

- The community should maintain control over tourism development
- Tourism should provide quality employment to community residents
- Encourage businesses to minimize negative effects on local communities and contribute positively to them
- Ensure an equitable distribution of financial benefits throughout the entire supply chain
- Provide financial incentives for local businesses to enter tourism
- Improve local human resource capacity

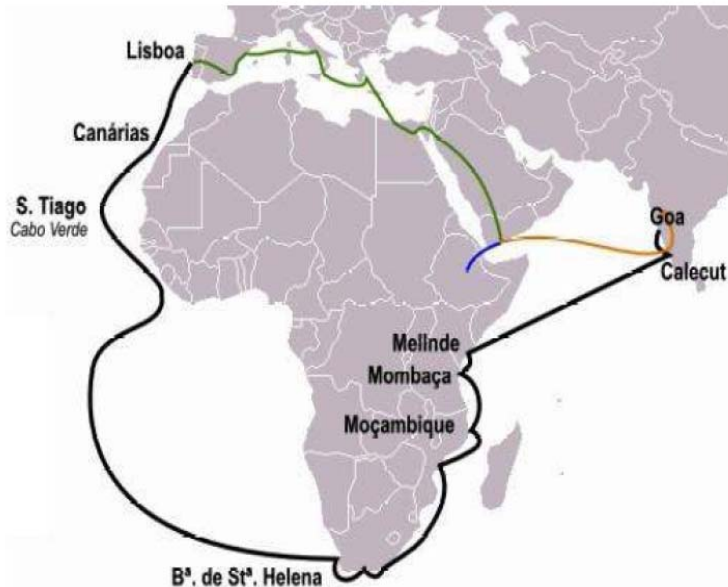
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Each case will have a complementary business focus, regarding the balance to minimize the seasonality flows.

Complex for Research and High Studies in Urban and Sustainable Construction



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- Portugal did in the XV/XVI Century the first steps for Globalization, giving the more important support through new commercial routes and linking the whole Globe by trade and commerce;
- This incredible action was done with the establishment of a new connection by sea, turning the African Continent, which eliminated commercial limitations (and strangulation) by land borders provoked by struggles and adverse Empires` (Ottomans and Mongols) for successful West/East relations;
- Once again, we can have an important role to redesign the route of "Vasco da Gama" (Portuguese Mariner), but now to disseminate the Glocalization Model.

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- Portugal is one of the World Countries with major influence around the world in terms of Historical, Cultural and Architectonic Values;
- Our Historical and Cultural presence is strongly important in developing regions such as Brazil, South China, West India, South Asia, Maghreb, Africa (ex. Angola) and Middle East (East Coast), where Sustainable development is crucial to avoid developed countries mistakes;
- Based on this Global Network, Portugal has the potential to achieve Sustainable dissemination by new Business Models;
- Also the Portuguese (descendants) Community in California can play an important action for Gemination and Cooperation in future Projects.

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THANK YOU